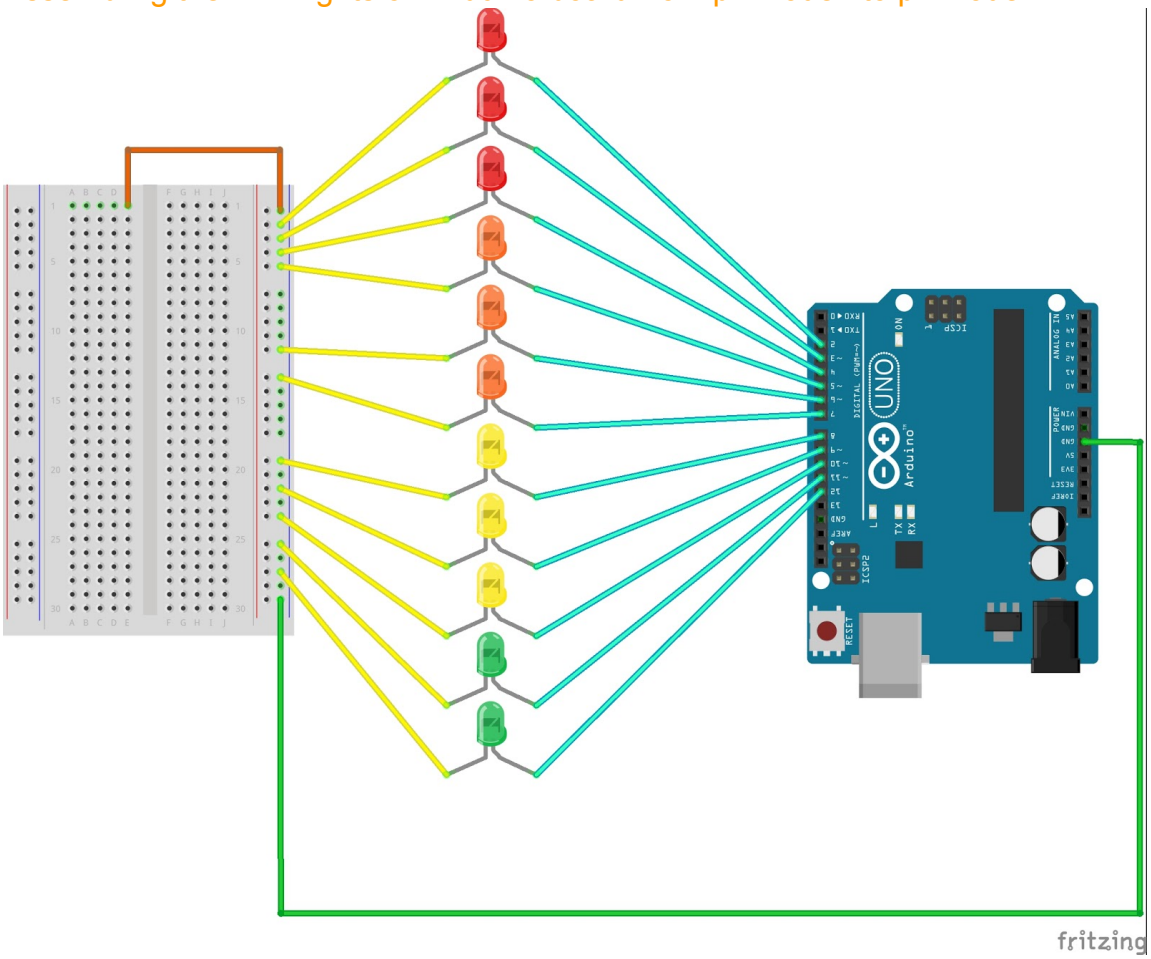
Lighting alphabet board Instructions

Step 1:

Open the Arduino, and set up a StandardFirmata file. (This is used for testing.)

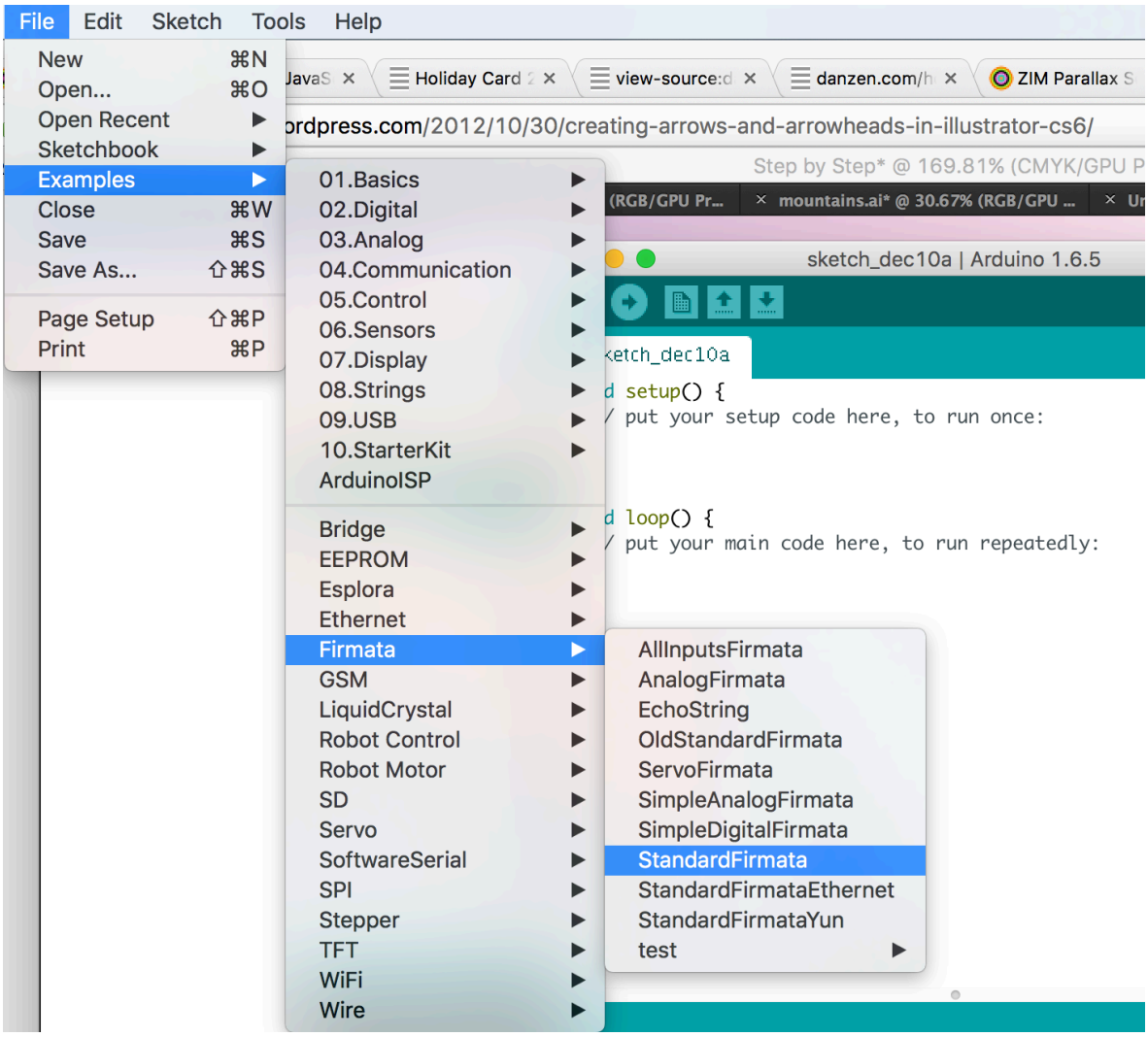
Step 2

Assembling the LED lights on Arduino board from pinMode2 to pinMode12.



Step 3

Upload the Standard Firmata sketch onto your Arduino board. Standard Firmata can be found in the Arduino environment at File/Sketchbook/Examples/Library-Firmata/StandardFirmata.



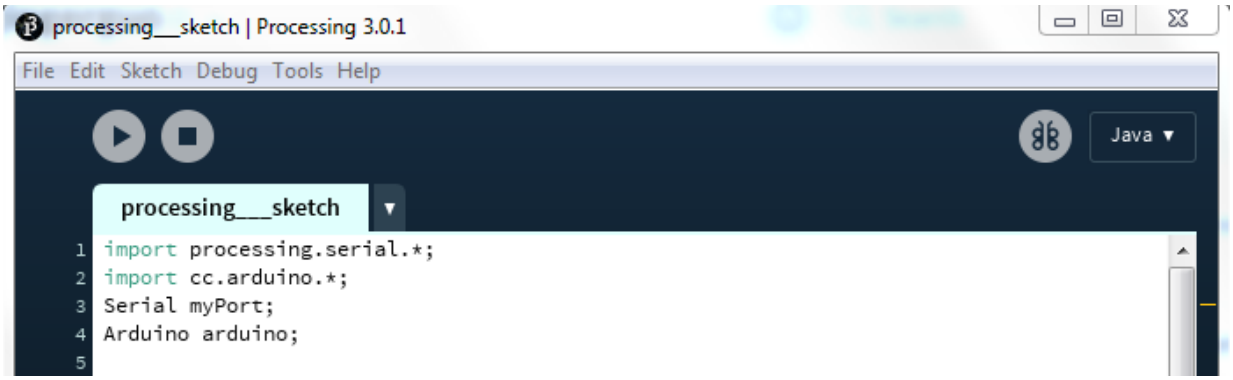
Install Arduino Firmata, from the Arduino programming environment. Firmata is a library you install into the Arduino environment. This library allows you to control an Arduino board from Processing without writing code for the Arduino. Instead, you upload a standard firmware 'Firmata' to the board and communicate with it using the library.

Step 4

Close Arduino program.

Step 5

Open Processing 3.0.1 sketch and run it.



The Serial Library reads and writes data to and from external devices one byte at a time.
The cc.arduino make the Processing talk with the Arduino.

Step 6

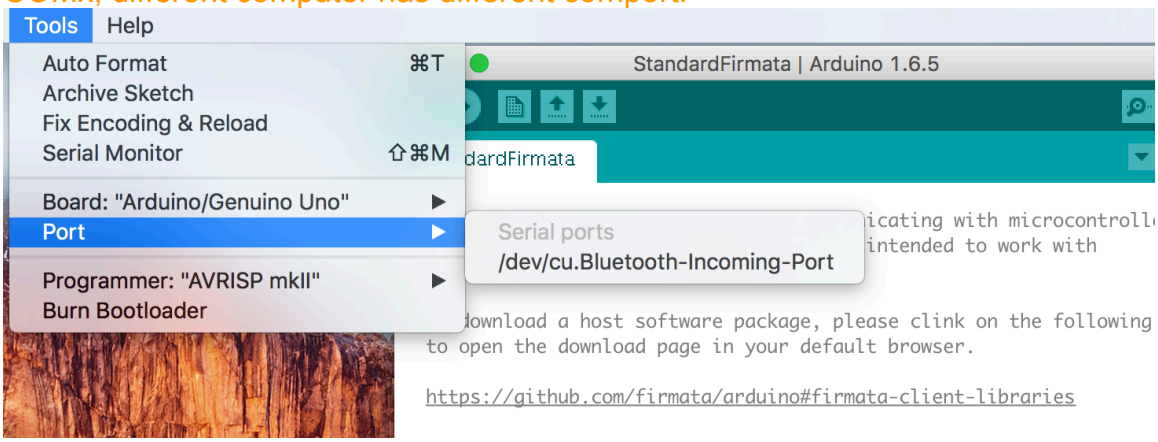
In our case, we are typing the keyboard to generate values for Processing. The code I used in Processing is here:

```
6  void setup () {
7   println(Arduino.list());
8   arduino = new Arduino(this, Arduino.list() [2], 57600);
9   arduino.pinMode(12, Arduino.OUTPUT);
10  arduino.pinMode(11, Arduino.OUTPUT);
11  arduino.pinMode(10, Arduino.OUTPUT);
12  arduino.pinMode(9, Arduino.OUTPUT);
13  arduino.pinMode(8, Arduino.OUTPUT);
14  arduino.pinMode(7, Arduino.OUTPUT);
15  arduino.pinMode(6, Arduino.OUTPUT);
16  arduino.pinMode(5, Arduino.OUTPUT);
17  arduino.pinMode(4, Arduino.OUTPUT);
18  arduino.pinMode(3, Arduino.OUTPUT);
19  arduino.pinMode(2, Arduino.OUTPUT);
20 }
21
```

```
21
22 void draw() {
23  if (keyPressed == true) {
24
25    if (key == 'k' || key == 'K') {
26      arduino.digitalWrite (12, Arduino.HIGH);
27    }
28    if (key == 'p' || key == 'P') {
29      arduino.digitalWrite (11, Arduino.HIGH);
30    }
31    if (key == 'q' || key == 'Q') {
32      arduino.digitalWrite (10, Arduino.HIGH);
33    }
34    if (key == 'l' || key == 'L') {
35      arduino.digitalWrite (9, Arduino.HIGH);
36    }
37    if (key == 'i' || key == 'I') {
38      arduino.digitalWrite (8, Arduino.HIGH);
39    }
40    if (key == 'v' || key == 'V') {
41      arduino.digitalWrite (7, Arduino.HIGH);
42    }
43    if (key == 'g' || key == 'G') {
44      arduino.digitalWrite (6, Arduino.HIGH);
45    }
46    if (key == 'm' || key == 'M') {
47      arduino.digitalWrite (5, Arduino.HIGH);
48    }
49    if (key == 'o' || key =='O') {
50      arduino.digitalWrite (4, Arduino.HIGH);
51    }
52    if (key == 'h' || key =='H') {
53      arduino.digitalWrite (3, Arduino.HIGH);
54    }
55    if (key == 'f' || key =='F') {
56      arduino.digitalWrite (2, Arduino.HIGH);
57    }
58
59  }
60  else {
61      arduino.digitalWrite (13, Arduino.LOW);
62      arduino.digitalWrite (12, Arduino.LOW);
63      arduino.digitalWrite (11, Arduino.LOW);
64      arduino.digitalWrite (10, Arduino.LOW);
65      arduino.digitalWrite (9, Arduino.LOW);
66      arduino.digitalWrite (8, Arduino.LOW);
67      arduino.digitalWrite (7, Arduino.LOW);
68      arduino.digitalWrite (6, Arduino.LOW);
69      arduino.digitalWrite (5, Arduino.LOW);
70      arduino.digitalWrite (4, Arduino.LOW);
71      arduino.digitalWrite (3, Arduino.LOW);
72      arduino.digitalWrite (2, Arduino.LOW);
73    }
74 }
```

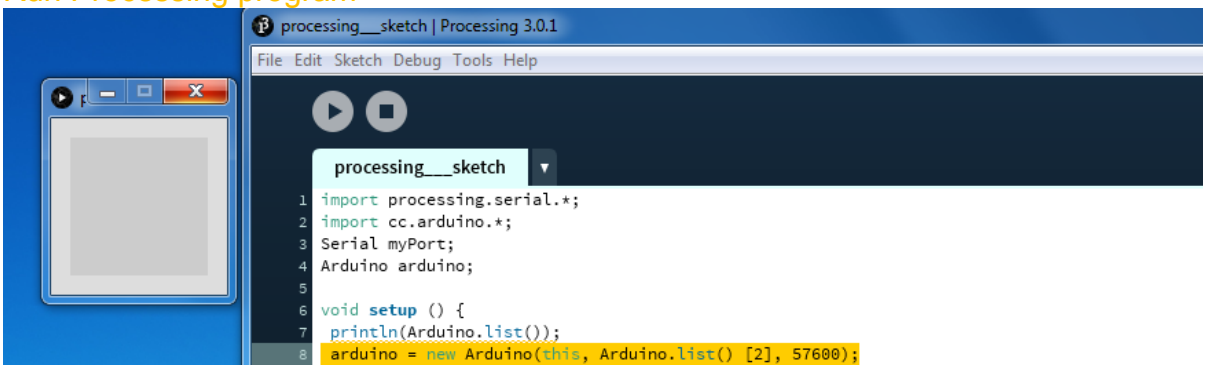
Step 7

Verify and upload the sketch in Arduino with the correct port. Arduino Tools/ port/ COMx, different computer has different comport.



Step 8

Run Processing program



Step 9

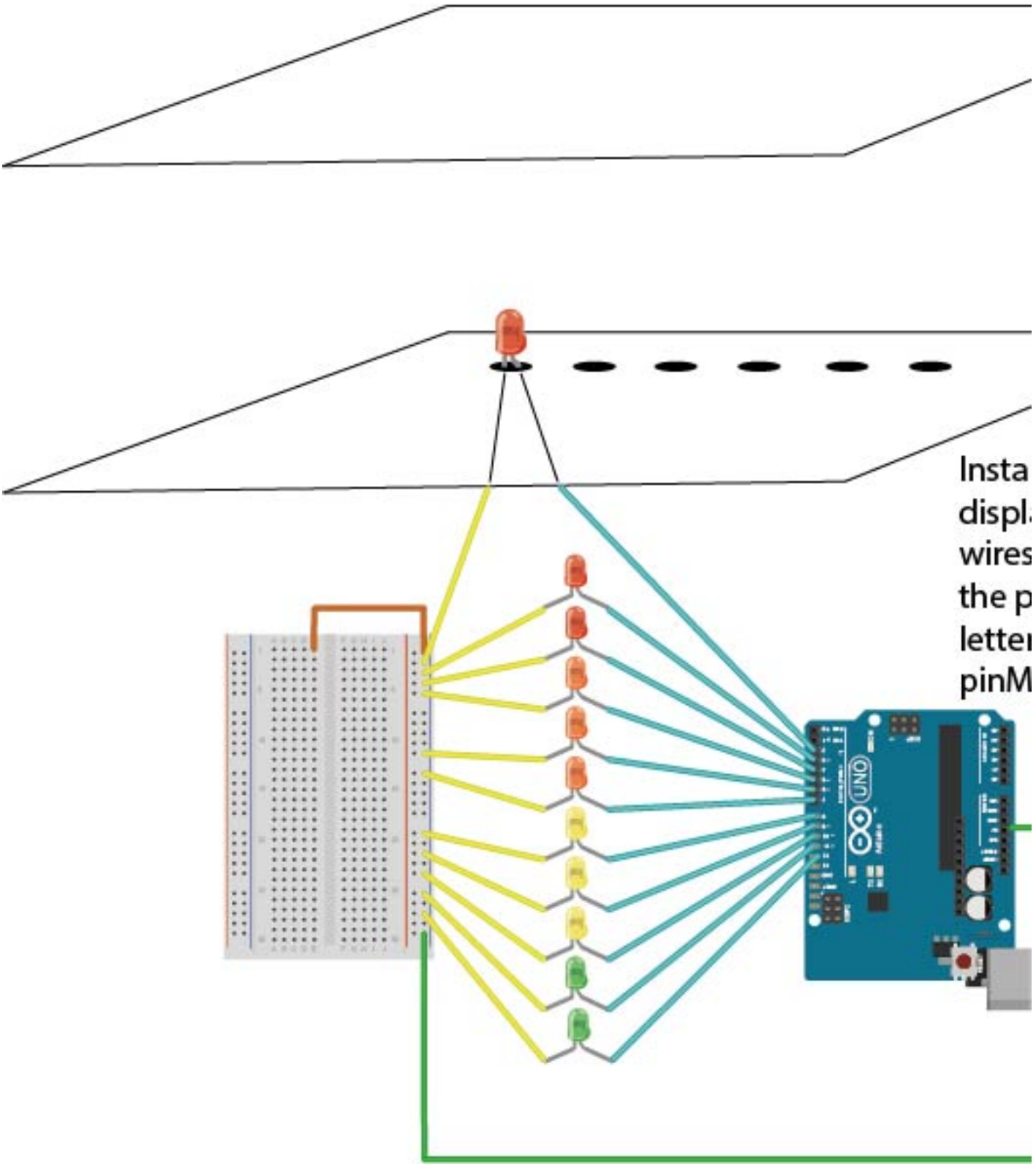
Tabbing the exact key on the keyboard and check each LED light, see if it works. If there is any problem with lights, stop the Processing program first. Correct the program of each pinMode, then run the Processing program until all the lights work.

Step 10

Install the LED lights on the display board with the original wires on Arduino. Be aware of the pinMode. Make sure the letters correspond to the exact pinMode LED light.

Step 11

Assembling the display board with the Alphabet board.



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 arduino.pinMode(10, Arduino.OUTPUT);
 arduino.pinMode(9, Arduino.OUTPUT);
 arduino.pinMode(8, Arduino.OUTPUT);
 arduino.pinMode(7, Arduino.OUTPUT);
 arduino.pinMode(6, Arduino.OUTPUT);
 arduino.pinMode(5, Arduino.OUTPUT);
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}
```

```
void draw() {
 if (keyPressed == true) {

   if (key == 'k' || key == 'K') {
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   }
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   if (key == 'o' || key =='O') {
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   if (key == 'h' || key =='H') {
     arduino.digitalWrite (3, Arduino.HIGH);
   }
   if (key == 'f' || key =='F') {
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```
 }
 else {
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     arduino.digitalWrite (3, Arduino.LOW);
     arduino.digitalWrite (2, Arduino.LOW);
   }
}
```

Step 6 Verify and upload the sketch in Arduino with the correct port. Arduino Tools/ port/ COMx

Step7 Run Processing program

Step8 Tabbing the exact key on the keyboard and check each LED light, see if it works. If there is any problem with lights, stop the Processing program first. Correct the program of each pinMode, then run the Processing program until all the lights work.

Step 9 Install the LED lights on the display board with the original wires on Arduino. Be aware of the pinMode. Make sure the letters correspond to the exact pinMode LED light.

Step 10 Assembling the display board with the Alphabet board.